AD2550RA/U3S3
AD2550R/U3S3
AD2550R

User Manual

Version 1.0
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(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see
www.dtsc.ca.gov/hazardouswaste/perchlorate"

ASRock Website: http://www.asrock.com

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Chapter 1: Introduction

Thank you for purchasing ASRock ***AD2550RA/U3S3 / AD2550R/U3S3 / AD2550R*** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains the introduction of the motherboard and step-by-step hardware installation guide. Chapter 3 and 4 contains the configuration guide of BIOS setup and information of the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock's website without further notice. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website http://www.asrock.com

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.

www.asrock.com/support/index.asp

1.1 Package Contents

ASRock ***AD2550RA/U3S3 / AD2550R/U3S3 / AD2550R*** Motherboard
(Mini ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)

ASRock ***AD2550RA/U3S3 / AD2550R/U3S3 / AD2550R*** Quick Installation Guide

ASRock ***AD2550RA/U3S3 / AD2550R/U3S3 / AD2550R*** Support CD

5 x Serial ATA (SATA) Data Cables (Optional)

1 x I/O Panel Shield

1.2 Specifications

Physical Status	Form Factor	Mini ITX
	Dimension	6.7" x 6.7" (17.02 cm x17.02 cm)
Processor System	CPU	Supports Intel® Dual-Core Atom D2550 Processor
	Socket	micro-FCBGA11
	Power Phase	1+1 Power Phase Design
	Chipset	Intel® ICH10R
System Memory	Capacity	2 x SO-DIMM slots Support up to 4GB
	Type	Single Channel DDR3 memory technology Supports DDR3 1066 DIMM
	Voltage	1.5V
Expansion Slot	PCIe x 16	**AD2550RA/U3S3**
		1 slots (x1)
		AD2550R/U3S3
		1 slots (x1)
		AD2550R
		1 slots (x4)
Graphics	Controller	Integrated (GMA3600)
	Output	- Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz - Supports HDMI with max. resolution up to 1920x1200 @ 60Hz
Ethernet	Interface	Gigabit LAN 10/100/1000 Mb/s
	LAN Controller	- 2 x Intel 82574L - Supports Wake-On-LAN - Supports Energy Efficient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE

Storage	SATA controller	Intel ICH10R : 5* x SATA2 3.0 Gb/s , support RAID 0, 1, 5, 10 (Default:5 SATA ports, w/eSATA ; Option: 6 SATA ports. wo/eSATA)
	Additional SATA controller	**AD2550RA/U3S3**
		Marvell SE9172: 2 x SATA3 6.0 Gb/s
		AD2550R/U3S3
		Marvell SE9172: 2 x SATA3 6.0 Gb/s
		AD2550R
		N/A
Rear Panel I/O	PS/2 KB/ mouse	1
	VGA port	D-sub x 1 , HDMI x1
	eSATA	1 (If without eSATA, the number of SATA2 ports will change from 5 to 6)
	USB 2.0 port	**AD2550RA/U3S3**
		6
		AD2550R/U3S3
		6
		AD2550R
		8
	USB 3.0 port	**AD2550RA/U3S3**
		Etron EJ188: 2 x USB 3.0
		AD2550R/U3S3
		Etron EJ188: 2 x USB 3.0
		AD2550R
		N/A
	Lan port	- 2 x RJ45 Gigabit Ethernet LAN ports - LAN Ports with LED (ACT/LINK LED and SPEED LED)
	COM port	1

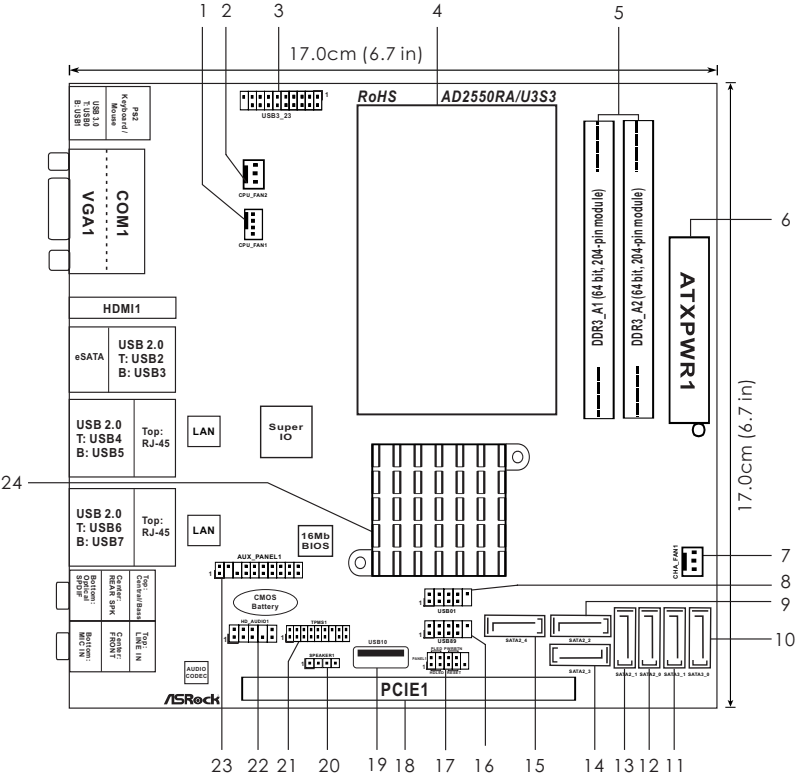
Internal Connector	Type A USB 2.0 port	1
	USB 2.0 header	**AD2550RA/U3S3**
		2 (Each support 2 USB 2.0)
		AD2550R/U3S3
		2 (Each support 2 USB 2.0)
		AD2550R
		1 (Each support 2 USB 2.0)
	USB 3.0 header	**AD2550RA/U3S3**
		Etron EJ188: 1 x USB 3.0 header (Each support 2 USB 3.0)
		AD2550R/U3S3
		Etron EJ188: 1 x USB 3.0 header (Each support 2 USB 3.0)
		AD2550R
		N/A
	Auxiliary panel header	1 (include chassis intrusion , location button & LED , front LAN LED)
	Front panel	1
	Speaker	1 (4 pin)
	TPM-S	1
	Fan header	3 (1 x 4-pin , 2 x 3-pin)
	ATX power	1 (24-pin)
Onboard LED	Standby PWR LED 5vsb	1
System BIOS	BIOS type	- 16Mb SPI Flash ROM - AMI UEFI BIOS

Hardware Monitor	Temperature	- CPU Temperature Sensing - System Temperature Sensing
	Fan	- CPU/Rear/Front Fan Tachometer - CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) - CPU Fan Multi-Speed Control
	Voltage	Voltage Monitoring: +12V, +5V, +3V, CPU Vcore, memory
Support OS	OS	Microsoft® Windows® 7 / Home Server 2011 / Storage Server 2008 R2 / Server 2008 R2 and Fedora (64bit OS* no g raphic driver support, need to use inbox graphic driver)
Features	Unique Features	- ASRock Instant Flash - ASRock Crashless BIOS - Boot Failure Guard (B.F.G.)

* For detailed product information, please visit our website: http://www.asrock.com

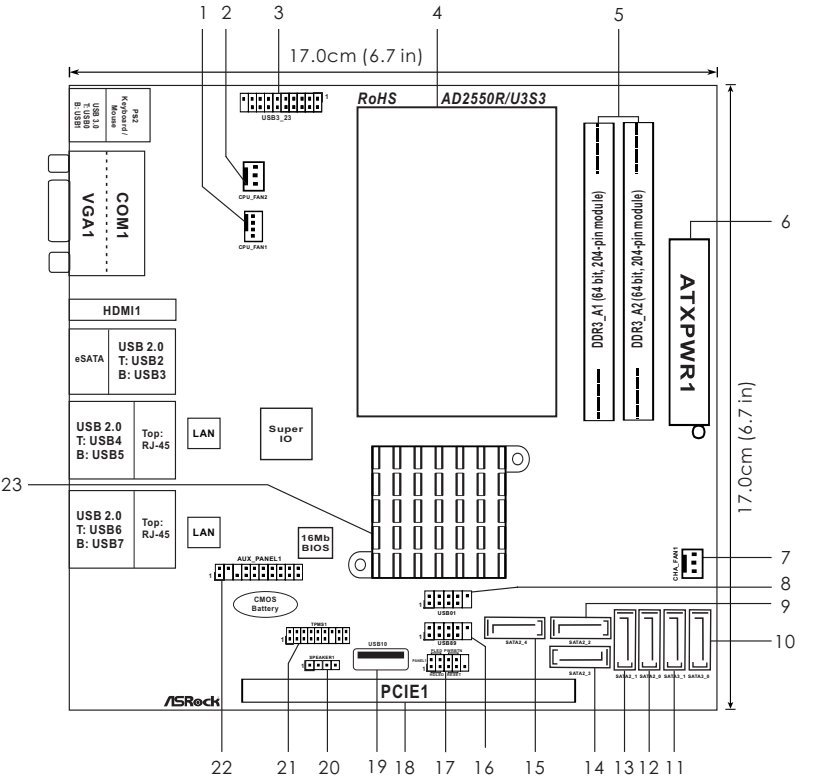
1.3 Motherboard Layout

AD2550RA/U3S3



1	CPU Fan Connector (CPU_FAN1)
2	CPU Fan Connector (CPU_FAN2)
3	USB 3.0 Header (USB3_23, Black)
4	CPU Heatsink
5	2 x 204-pin DDR3 SO-DIMM Slots
	(DDR3_A1, DDR3_A2, Black)
6	ATX Power Connector (ATXPWR1)
7	Chassis Fan Connector (CHA_FAN1)
8	USB 2.0 Header (USB01, Blue)
9	SATA2 Connector (SATA2_2, Blue)
10	SATA3 Connector (SATA3_0, White)
11	SATA3 Connector (SATA3_1, White)
12	SATA2 Connector (SATA2_0, Blue)
13	SATA2 Connector (SATA2_1, Blue)
14	SATA2 Connector (SATA2_3, Blue)
15	SATA2 Connector (SATA2_4, Blue)
16	USB 2.0 Header (USB89, Blue)
17	System Panel Header (PANEL1, White)
18	PCI Express 1.0 x16 Slot (PCIE1, Blue)
19	Vertical Type A USB (USB10)
20	Chassis Speaker Header (SPEAKER 1, White)
21	TPM-S Header (TPMS1)
22	Front Panel Audio Header (HD_AUDIO1, White)
23	Auxiliary panel header (AUX_PANEL1)
24	Intel ICH10R Chipset

AD2550R/U3S3



1	CPU Fan Connector (CPU_FAN1)
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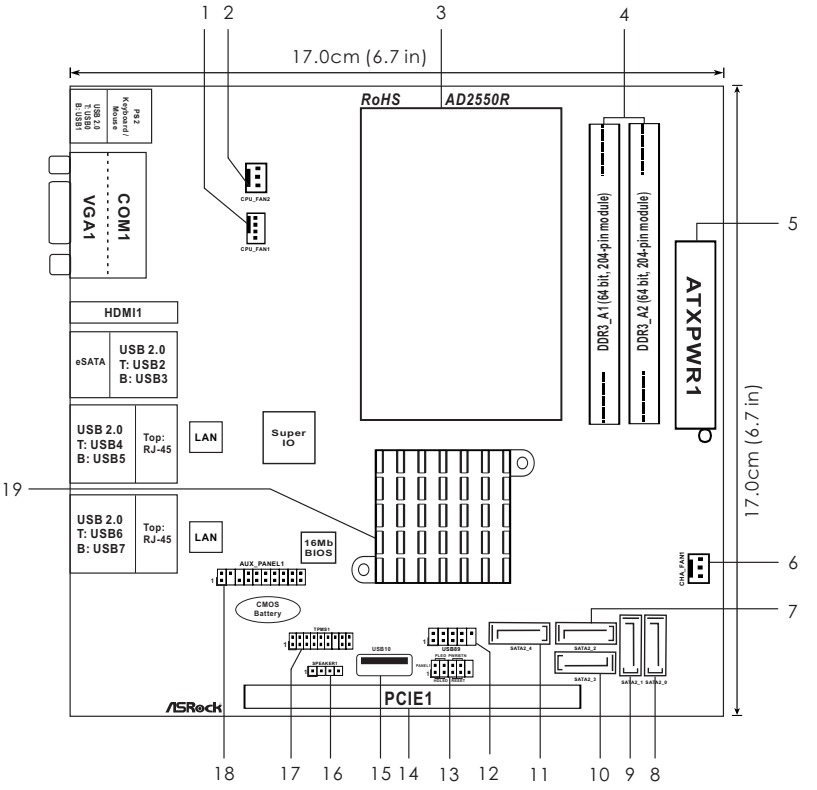
5	2 x 204-pin DDR3 SO-DIMM Slots
	(DDR3_A1, DDR3_A2, Black)
6	ATX Power Connector (ATXPWR1)
7	Chassis Fan Connector (CHA_FAN1)
8	USB 2.0 Header (USB01, Blue)
9	SATA2 Connector (SATA2_2, Blue)
10	SATA3 Connector (SATA3_0, White)
11	SATA3 Connector (SATA3_1, White)
12	SATA2 Connector (SATA2_0, Blue)
13	SATA2 Connector (SATA2_1, Blue)
14	SATA2 Connector (SATA2_3, Blue)
15	SATA2 Connector (SATA2_4, Blue)
16	USB 2.0 Header (USB89, Blue)
17	System Panel Header (PANEL1, White)
18	PCI Express 1.0 x16 Slot (PCIE1, Blue)
19	Vertical Type A USB (USB10)
20	Chassis Speaker Header (SPEAKER 1, White)
21	TPM-S Header (TPMS1)
22	Auxiliary panel header (AUX_PANEL1)
23	Intel ICH10R Chipset

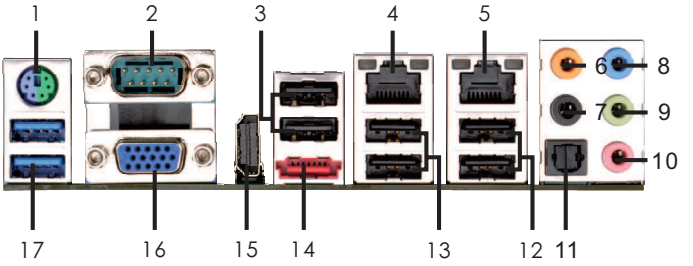
AD2550R


1
2
3
4
17.0cm (6.7 in)
RoHS
AD2550R
CPU_FAN2
CPU_FAN1
DDR3_A1 (64 bit, 204-pin module)
DDR3_A2 (64 bit, 204-pin module)
ATXPWR1
5
17.0cm (6.7 in)
VGA1
COM1
HDMI1
eSATA
USB 2.0
T: USB2
B: USB3
USB 2.0
T: USB4
B: USB5
Top:
RJ-45
LAN
Super IO
19
USB 2.0
T: USB6
B: USB7
Top:
RJ-45
LAN
16Mb BIOS
CHA_FAN1
6
AUX_PANEL1
CMOS Battery
7
SATA2_4
SATA2_2
SATA2_3
SATA3_1
SATA3_0
USB3_3
USB3_4
USB3_5_6
USB3_7_8
USB3_9_10
USB3_11_12
USB10
SPEAKER1
PLED_PWRBTN
PANEL1
PCIE1
ASRock
18
17
16
15
14
13
12
11
10
9
8

1	CPU Fan Connector (CPU_FAN1)
2	CPU Fan Connector (CPU_FAN2)
3	CPU Heatsink
4	2 x 204-pin DDR3 SO-DIMM Slots
	(DDR3_A1, DDR3_A2, Black)
5	ATX Power Connector (ATXPWR1)
6	Chassis Fan Connector (CHA_FAN1)
7	SATA2 Connector (SATA2_2, Blue)
8	SATA2 Connector (SATA2_0, Blue)
9	SATA2 Connector (SATA2_1, Blue)
10	SATA2 Connector (SATA2_3, Blue)
11	SATA2 Connector (SATA2_4, Blue)
12	USB 2.0 Header (USB89, Blue)
13	System Panel Header (PANEL1, White)
14	PCI Express 1.0 x16 Slot (PCIE1, Blue)
15	Vertical Type A USB (USB10)
16	Chassis Speaker Header (SPEAKER 1, White)
17	TPM-S Header (TPMS1)
18	Auxiliary panel header (AUX_PANEL1)
19	Intel ICH10R Chipset

1.4 I/O Panel

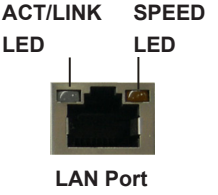
AD2550RA/U3S3



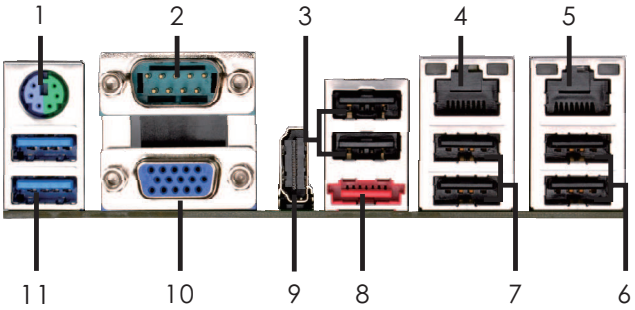
1 PS/2 Keyboard / Mouse Port (Green)
2 COM Port
3 USB 2.0 Ports (USB23)
*** 4 LAN RJ-45 Port**
*** 5 LAN RJ-45 Port**
6 Central / Bass (Orange)
7 Rear Speaker (Black)
8 Line In (Light Blue)
9 Front Speaker (Lime)
10 Microphone (Pink)
11 Optical SPDIF Out Port
12 USB 2.0 Ports (USB67)
13 USB 2.0 Ports (USB45)
14 eSATA Port
15 HDMI Port
16 VGA Port
17 USB 3.0 Ports (USB01)

* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection



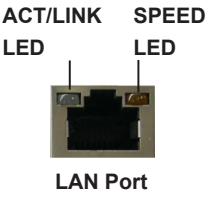
AD2550R/U3S3



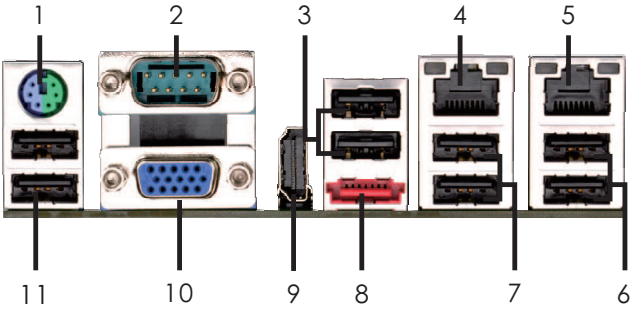
1 PS/2 Keyboard / Mouse Port (Green)
2 COM Port
3 USB 2.0 Ports (USB23)
*** 4 LAN RJ-45 Port**
*** 5 LAN RJ-45 Port**
6 USB 2.0 Ports (USB67)
7 USB 2.0 Ports (USB45)
8 eSATA Port
9 HDMI Port
10 VGA Port
11 USB 3.0 Ports (USB01)

* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection



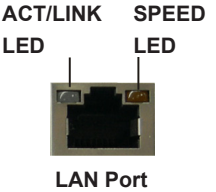
AD2550R



1 PS/2 Keyboard / Mouse Port (Green)
2 COM Port
3 USB 2.0 Ports (USB01)
*** 4 LAN RJ-45 Port**
*** 5 LAN RJ-45 Port**
6 USB 2.0 Ports (USB67)
7 USB 2.0 Ports (USB54)
8 eSATA Port
9 HDMI Port
10 VGA Port
11 USB 2.0 Ports (USB01)

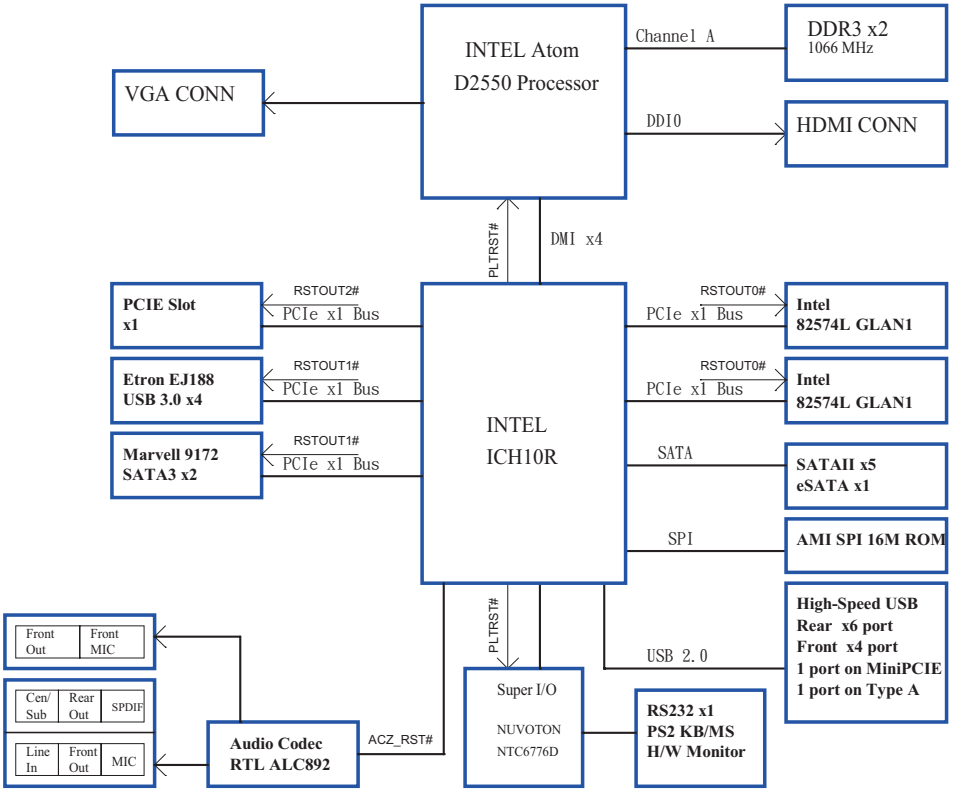
* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection

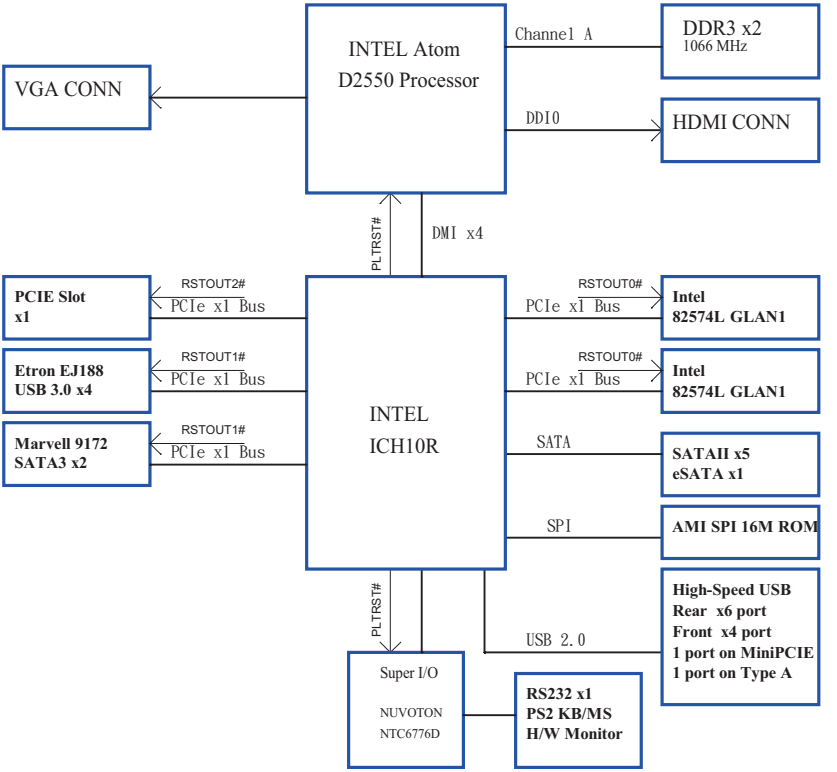


1.5 Block Diagram

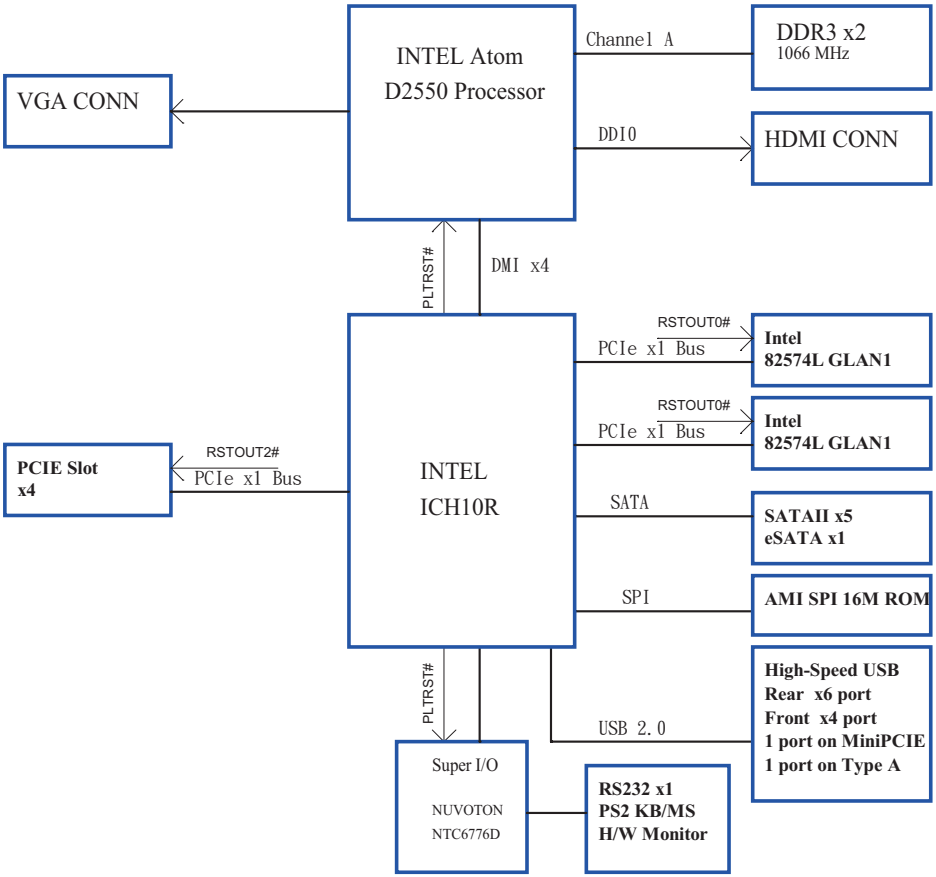
AD2550RA/U3S3



AD2550R/U3S3



AD2550R


INTEL Atom
D2550 Processor
VGA CONN
Channel A
DDR3 x2
1066 MHz
DDIO
HDMI CONN
PLTRST#
DMI x4
INTEL
ICH10R
RSTOUT0#
PCIe x1 Bus
Intel
82574L GLAN1
RSTOUT0#
PCIe x1 Bus
Intel
82574L GLAN1
PCIE Slot
x4
RSTOUT2#
PCIe x1 Bus
SATA
SATAII x5
eSATA x1
SPI
AMI SPI 16M ROM
PLTRST#
USB 2.0
High-Speed USB
Rear x6 port
Front x4 port
1 port on MiniPCIE
1 port on Type A
Super I/O
NUVOTON
NTC6776D
RS232 x1
PS2 KB/MS
H/W Monitor

Chapter 2: Installation

This is a Mini-ITX form factor (6.7" x 6.7", 17.0 x 17.0 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply.
Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Installation of Memory Modules (SO-DIMM)

AD2550RA/U3S3 / AD2550R/U3S3 / AD2550R motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots.

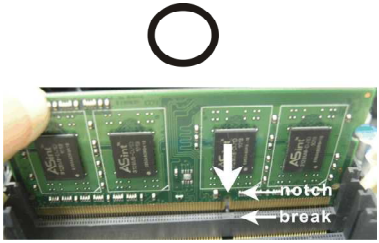
1. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and SO-DIMM may be damaged.
2. Please install the memory module from DDR3_A2 slot for the first priority.

Installing a SO-DIMM

Please make sure to disconnect power supply before adding or removing SO-DIMMs or the system components.

Step 1. Unlock a SO-DIMM slot by pressing the retaining clips outward.

Step 2. Align a SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.



The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

2.4 Expansion Slots (PCI Express Slots)

There is 1 PCI Express slot on this motherboard.

PCIE slots:

AD2550RA/U3S3 / AD2550R/U3S3

PCIE1 (PCIE 1.0 x1 slot) is used for PCI Express x1 lane width cards.

AD2550R

PCIE1 (PCIE 1.0 x4 slot) is used for PCI Express x4 lane width cards.

Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.5 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard!

Serial ATA2 Connectors
(see p.10,12,14)

These five Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

Serial ATA3 Connectors
(see p.10,12)

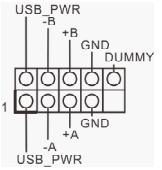
These two Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

Serial ATA (SATA) Data Cable

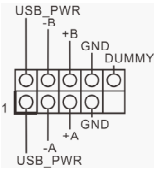
Either end of the SATA data cable can be connected to SATA / SATA2 / SATA3 hard disks or the SATA2 / SATA3 connectors on this motherboard.

USB 2.0 Headers and Ports

(9-pin USB0_1)
(see p.10,12)



(9-pin USB8_9)
(see p.10,12,14)

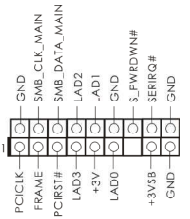


(USB6)
(see p.10,12,14)

Besides two default USB 2.0 ports on the I/O panel, there are are two USB 2.0 headers and one port on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

TPMS Header

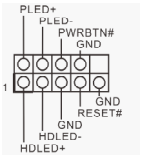
(17-pin TPMS1)
(see p.10,12,14)



This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

System Panel Header

(9-pin PANEL1)
(see p.10,12,14)



This header accommodates several system front panel functions.

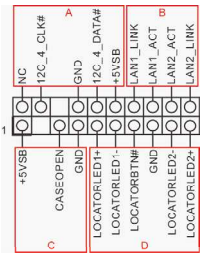
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the sys-tem is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Auxiliary Panel Header

(18-pin AUX_PANEL1)
(see p.10,12,14)

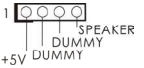


This header supports multiple functions on the front panel, including front panel SMB, internet status indicator and chassis intrusion pin.

A. Front panel SMBus connecting pin (6-pin FPSMB)
This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

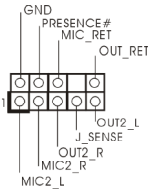
B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.
C. Chassis intrusion pin (4-pin CHASSIS)
This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.
D. Locator LED (6-pin LOCATOR)
This header is for the locator switch and LED on the front panel.

Speaker Header
(4-pin SPEAKER1)
(see p.10,12,14)



Please connect the speaker to this header.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.10)

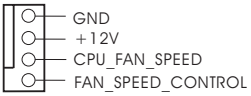


This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.

CPU Fan Connectors

(4-pin CPU_FAN1)
(see p.10,12,14)



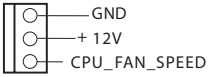
Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides a 4-Pin CPU fan (Quiet Fan) connector, 3-Pin CPU fans can still work successfully even without the fan speed control function. If you plan to connect a 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

Pin 1-3 Connected

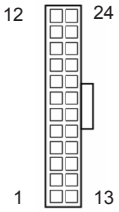
3-Pin Fan Installation

(3-pin CPU_FAN2)
(see p.10,12,14)



ATX Power Connector

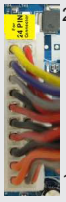
(24-pin ATXPWR1)
(see p.10,12,14)



Please connect an ATX power supply to this connector.

Though this motherboard provides a 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use a 20-pin ATX power supply, please plug your power supply along Pin 1 and Pin 13.

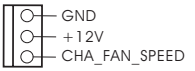
20-Pin ATX Power Supply Installation



Chassis Fan Connector

(3-pin CHA_FAN1)

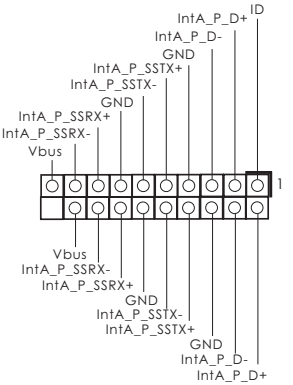
(see p.10,12,14)



Please connect the fan cable to the fan connector and match the black wire to the ground pin.

USB 3.0 Headers

(see p.10,12)



Besides eight default USB 3.0 ports on the I/O panel, there are two USB 3.0 header on this motherboard. Each USB 3.0 header can support two USB 2.0 ports.

2.6 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.7 Hot Plug for Hard Disk Drives

This motherboard supports Hot Plug for HDDs in AHCI / RAID mode.

What is Hot Plug?

If the HDDs are NOT set for RAID, it is called “Hot Plug” for the action to insert and remove the HDDs while the system is still powered on and in working condition. However, please note that it cannot perform Hot Plug if the OS has been installed into the HDD.

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherawise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
Advanced	For advanced system configurations
H/W Monitor	Displays current hardware status
Boot	For configuring boot settings and boot priority
Security	For security settings
Save & Exit	Exit the current screen or the UEFI Setup Utility
Server Mgmt	For managing the server
Event Logs	For event log configuration

3.1.2 Navigation Keys

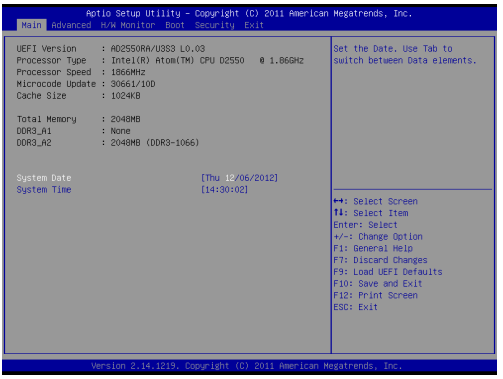
Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Function Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

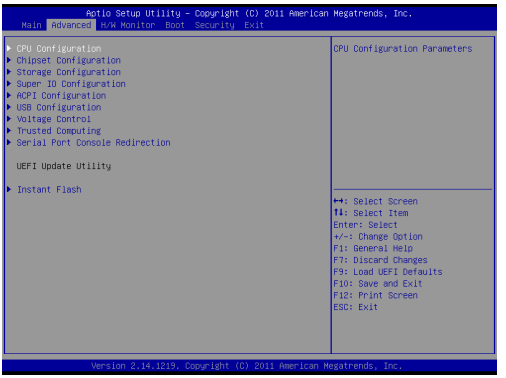
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
UEFI Version : A02550RA/U3S3 L0.03
Processor Type : Intel(R) Atom(TM) CPU D2550 @ 1.86GHz
Processor Speed : 1866MHz
Microcode Update : 30661/10D
Cache Size : 1024KB
Total Memory : 2048MB
DDR3_A1 : None
DDR3_A2 : 2048MB (DDR3-1066)
System Date [Thu 12/06/2012]
System Time [14:30:02]
Set the Date. Use Tab to switch between Data elements.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration, Voltage Control, ,Trusted Computing, and Serial Port Console Redirection.



Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.3.1 CPU Configuration

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU Configuration
Processor Speed 1866 MHz
Actual Ratio 14
Hyper-Threading [Enabled]
No-Execute Memory Protection [Enabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

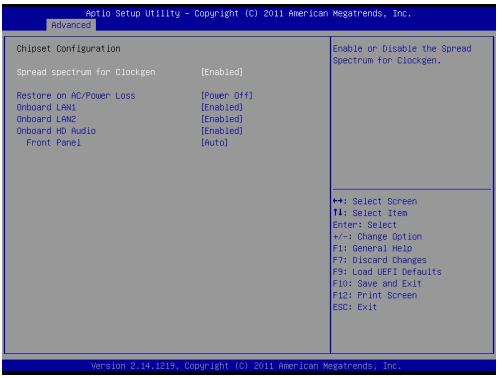
Intel Hyper Threading Technology

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology is required. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

No-Execute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

3.3.2 Chipset Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Chipset Configuration
Spread spectrum for Clockgen [Enabled]
Restore on AC/Power Loss [Power Off]
Onboard LAN1 [Enabled]
Onboard LAN2 [Enabled]
Onboard HD Audio [Enabled]
Front Panel [Auto]
Enable or Disable the Spread Spectrum for Clockgen.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Spread Spectrum for Clockgen

Select [Disabled] for better system stability.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Onboard LAN1

This allows you to enable or disable the Onboard LAN1.

Onboard LAN2

This allows you to enable or disable the Onboard LAN2.

Onboard HD Audio

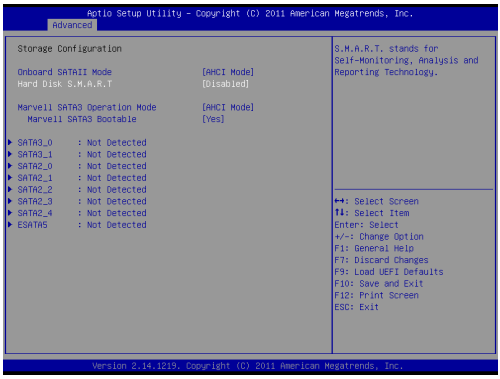
Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Front Panel

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

*__Onboard HD Audio__ is designed only for ***AD2550RA/U3S3***.

3.3.3 Storage Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Storage Configuration
Onboard SATAII Mode [AHCI Mode]
Hard Disk S.M.A.R.T [Disabled]
Marvell SATA3 Operation Mode [AHCI Mode]
Marvell SATA3 Bootable [Yes]
SATA3_0 : Not Detected
SATA3_1 : Not Detected
SATA2_0 : Not Detected
SATA2_1 : Not Detected
SATA2_2 : Not Detected
SATA2_3 : Not Detected
SATA2_4 : Not Detected
ESATA5 : Not Detected
S.M.A.R.T. stands for Self-Monitoring, Analysis and Reporting Technology.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Onboard SATAII Mode

This item is for eSATA 5 and SATA2_0 to SATA2_4 ports. Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [AHCI Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

Hard Disk S.M.A.R.T.

Use this to enable or disable S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

Marvell SATA3 Operation Mode

This item is for SATA3_0 and SATA3_1 ports. Use this to select Marvell SATA3 operation mode. Configuration options: [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [AHCI Mode].

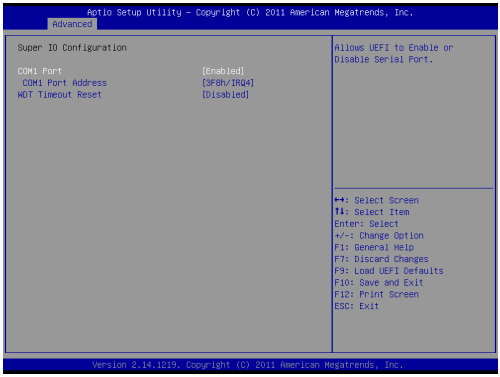
Marvell SATA3 Bootable

Use this to enable or disable Onboard Marvell SATA3 Option ROM. If Option ROM is disabled, you cannot use the SATA devices connected to the Marvell SATA3 controller as Boot Device.

*__Marvell SATA3 Operation Mode__ is designed only for ***AD2550RA/U3S3*** and ***AD2550RA/U3S3***.

We recommend to use Intel® ICH10R SATA ports (SATA2_0 to SATA2_4) for your bootable devices. This will minimum your boot time and get the best performance. But if you still want to boot from the Marvell SATA3 controller, you can enable it from the UEFI.

3.3.4 Super IO Configuration



COM1 Port

Use this item to enable or disable the COM1 port.

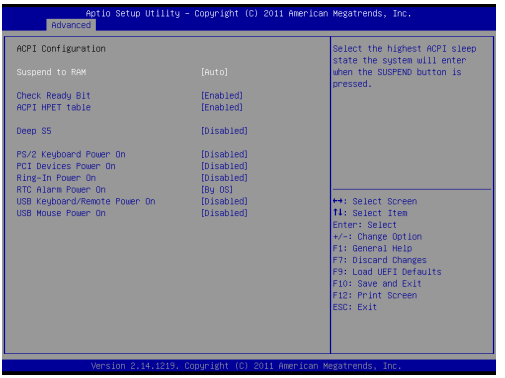
COM1 Port Address

Use this to set the address for the onboard serial port. Configuration options: [3F8h / IRQ4] and [3E8h / IRQ4].

WDT Timeout Reset

This allows you to enable or disable the Watchdog Timeout Reset function. The default value is [Disabled].

3.3.5 ACPI Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Configuration
Suspend to RAM [Auto]
Check Ready Bit [Enabled]
ACPI HPET table [Enabled]
Deep S5 [Disabled]
PS/2 Keyboard Power On [Disabled]
PCI Devices Power On [Disabled]
Ring-In Power On [Disabled]
RTC Alarm Power On [By OS]
USB Keyboard/Remote Power On [Disabled]
USB Mouse Power On [Disabled]
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Selecting [Auto] will enable this feature if the OS supports it.

Check Ready Bit

Use this to enable or disable Check Ready Bit.

ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled].

Deep S5

Use this item to enable or disable the Deep S5 (Shut Down) power saving mode.

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to turn on the system from the power-soft-off mode.

USB Mouse Power On

Use this item to enable or disable USB Mouse to turn on the system from the power-soft-off mode.

3.3.6 USB Configuration

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
USB Configuration
USB 2.0 Controller [Enabled]
USB 3.0 Controller [Enabled]
Legacy USB Support [Enabled]
Legacy USB 3.0 Support [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

USB 2.0 Controller

Use this item to enable or disable the use of USB 2.0 controller.

USB 3.0 Controller

Use this item to enable or disable the use of USB 3.0 controller.

Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter OS.

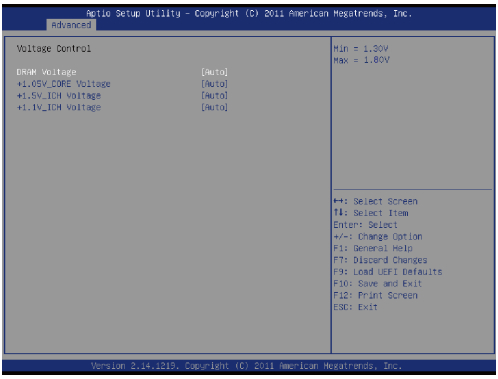
[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

Legacy USB 3.0 Support

Use this option to select legacy support for USB 3.0 devices.

*__USB 3.0 Controller__ and __Legacy USB 3.0 Support__ are designed only for ***AD2550RA/U3S3*** and ***AD2550R/U3S3***.

3.3.7 Voltage Control



.

DRAM Voltage

Use this to select DRAM Voltage. The default value is [Auto].

+1.05V_CORE Voltage

Use this to select +1.05V_CORE Voltage. The default value is [Auto].

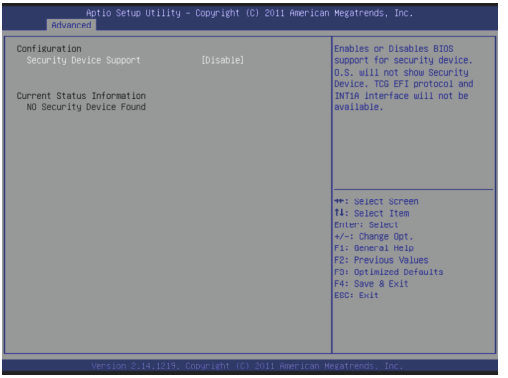
+1.5V_ICH Voltage

Use this to select +1.5V_ICH Voltage. The default value is [Auto].

+1.1V_ICH Voltage

Use this to select +1.1V_ICH Voltage. The default value is [Auto].

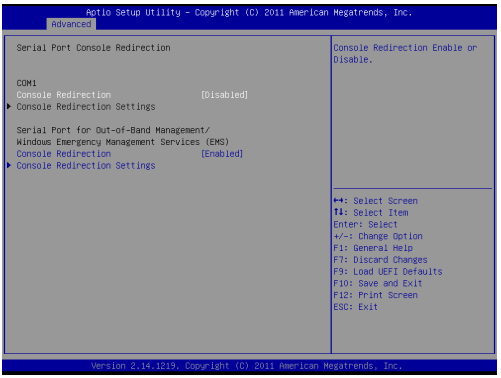
3.3.8 Trusted Computing


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Configuration
Security Device Support [Disable]
Current Status Information
NO Security Device Found
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

TPM Support

Use this option to enable or disable BIOS support for security devices. The default value is [Disabled].

3.3.9 Serial Port Console Redirection



Console Redirection

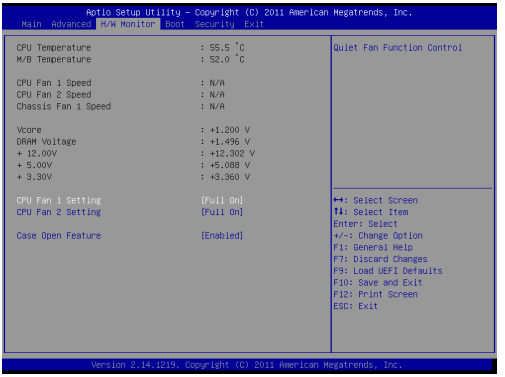
Use this option to enable or disable Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings.

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature and the critical voltage.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
CPU Temperature : 55.5 °C
M/B Temperature : 52.0 °C
CPU Fan 1 Speed : N/A
CPU Fan 2 Speed : N/A
Chassis Fan 1 Speed : N/A
Vcore : +1.200 V
DRAM Voltage : +1.496 V
+ 12.00V : +12.302 V
+ 5.00V : +5.088 V
+ 3.30V : +3.360 V
CPU Fan 1 Setting [Full On]
CPU Fan 2 Setting [Full On]
Case Open Feature [Enabled]
Quiet Fan Function Control
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

CPU Fan 1 Setting

This allows you to set the speed of CPU fan 1. The default value is [Full On].

CPU Fan 2 Setting

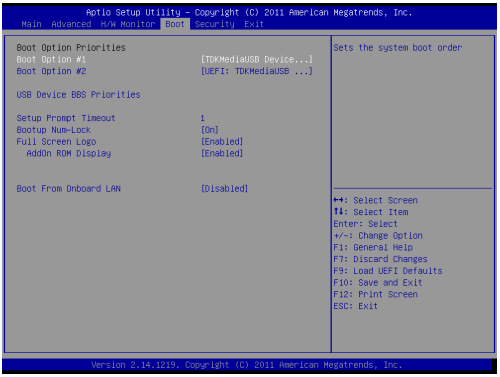
This allows you to set the speed of CPU fan 2. The default value is [Full On].

Case Open Feature

This allows you to enable or disable the Case Open Feature. The default value is [Enabled].

3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Boot Option Priorities
Boot Option #1 [TDKMediaUSB Device...]
Boot Option #2 [UEFI: TDKMediaUSB ...]
USB Device BBS Priorities
Setup Prompt Timeout 1
Bootup Num-Lock [On]
Full Screen Logo [Enabled]
AddOn ROM Display [Enabled]
Boot From Onboard LAN [Disabled]
Sets the system boot order
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Boot Option #1

Select boot option #1.

Boot Option #2

Select boot option #2.

USB Device BBS Priorities

Set the boot priorities for USB devices.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup NumLock State

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

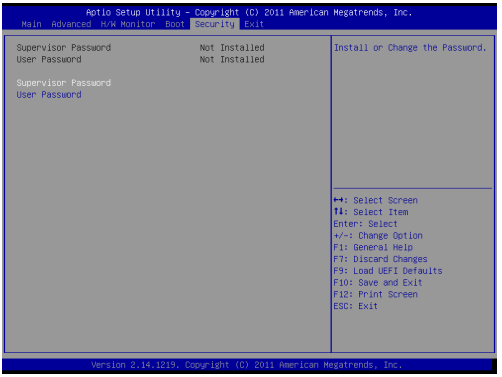
Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Supervisor Password Not Installed
User Password Not Installed
Supervisor Password
User Password
Install or Change the Password.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Secure Boot

Use this to enable or disable Secure Boot Control. The default value is [Disabled].

3.7 Exit Screen

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load UEFI Defaults
Launch EFI Shell from filesystem device
Exit system setup after saving the changes.
F10 key can be used for this operation.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
F12: Print Screen
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Save Changes and Exit

When you select this option, the following message “Save configuration changes and exit setup?” will pop-out. Select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message “Discard changes and exit setup?” will pop-out. Select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message “Discard changes?” will pop-out. Select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Attempt to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports Microsoft® Windows® Server 2003 / 2003 R2 / 2008 / 2008 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information.

Chapter 5: Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.

Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries to you and damages to motherboard components.

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...

1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...

1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR3 1600/1333/1066 ECC DIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify

faulty ones.

5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether your power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to your problem on ASRock's FAQ page:
   http://www.asrock.com/support/faq.asp
2. Try downloading and updating the latest UEFI on ASRock's website:
   http://www.asrock.com/support/download.asp

5.2 Technical Support Procedures

If you have tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock's technical support with the following information:

1. Your contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

You may contact ASRock's technical support at:
http://www.asrock.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of your invoice marked with the date of purchase is required. By calling your vendor or going to our RMA website (http://www.asrock.com/support/index.asp?cat=RMA) you may obtain a Returned Merchandise Authorization (RMA) number.
The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when you return the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

Contact your distributor first for any product related problems during the warranty period.